

OBSERVATIONS ON SOME AUSTRALIAN FOREST INSECTS.

17. TWO NEW SPECIES OF GLYCASPIS (HOMOPTERA: PSYLLIDAE) AND A NOTE ON
GLYCASPIS OCCIDENTALIS (SOLOMON).

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(Five Text-figures.)

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Synopsis.

Two species of *Glycaspis* (*Alloglycaspis*) from South Australia are described and figured. A lectotype male of *Glycaspis occidentalis* (Solomon) is selected, the claspers and aedeagus are figured and label data on all specimens of the type series of this species are given. The host associations and the evolutionary position of the species examined are discussed.

GLYCASPIS (ALLOGLYCASPIS) WANBIENSIS, sp. nov.

The name refers to the type locality of this species: Wanbi Experiment Station, Loxton, South Australia.

General colour: (Dried specimens) pale yellow to yellow, with or without pale brown to brown markings, sometimes with red or green suffusion; abdomen may be suffused pale blue.

Male: Head: width 0.59 mm., yellow, sometimes suffused red; vertex: along suture 0.24 mm., width 0.34 mm.; posterior border with variable brown markings, suture sometimes pale brown; genal processes: length 0.22 mm., deep cream; antennae: length 0.95 mm., segs. 1 to 3 cream, segs. 4 to 7 suffused pale brown, segs. 8 and 9 darker brown, seg. 10 almost black. Pronotum: width 0.49 mm., yellow, with depressions at bases of prominences each side sometimes brown. Prescutum, scutum, scutellum, metascutellum and area between, yellow. Metanotum and post-metanotum, yellow. Abdomen: sometimes with transverse variable brown marking on some segments. Genitalia: yellow suffused pale brown, claspers and aedeagus as in Text-figure 3. Length of aedeagus (13 specimens): Extremes 0.180 mm. to 0.207 mm. Forewing: (Text-fig. 1) length 1.71 mm., width 0.61 mm., venation cream suffused pale brown on the anterior half of wing. Hindwing: Cu_1 as in Text-figure 2. Ventral: pale yellow.

Female: General colour as for the male, but brown markings sometimes darker and more extensive.

Host-plant: *Eucalyptus transcontinentalis* Maiden (morrel).

Type locality: Wanbi Experiment Station, Loxton, South Australia.

Types: Holotype male on slide labelled "Loxton, S.A., 15 iii 1961, N. Stewart. *E. transcontinentalis*", to The Australian Museum, Sydney. Paratypes: 4 slides labelled as above to the Waite Agricultural Research Institute, Adelaide, South Australia, and 2 slides with the same label data to The Australian Museum. Dried specimens: 2 males and 1 female to the Waite Institute, and 1 male and 1 female to The Australian Museum.

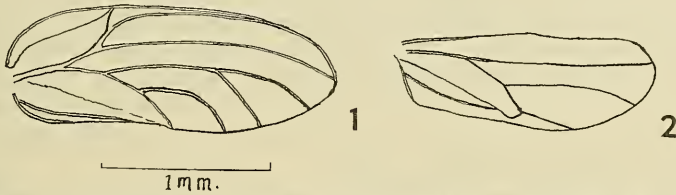
This species is nearest to *G. occidentalis* and can be separated by the claspers and aedeagus of the male.

GLYCASPIS (ALLOGLYCASPIS) REPENTINA, sp. nov.

L. repentinus = giving surprise. Referring to the unexpected occurrence of this species, intermingling with *G. wanbiensis*.

General colour: (Dried specimens) dark brown, or yellow marked with variable amounts of brown. Intergradation in coloration with specimens of *G. wanbiensis* occurs, and the two species usually are not separable on coloration alone.

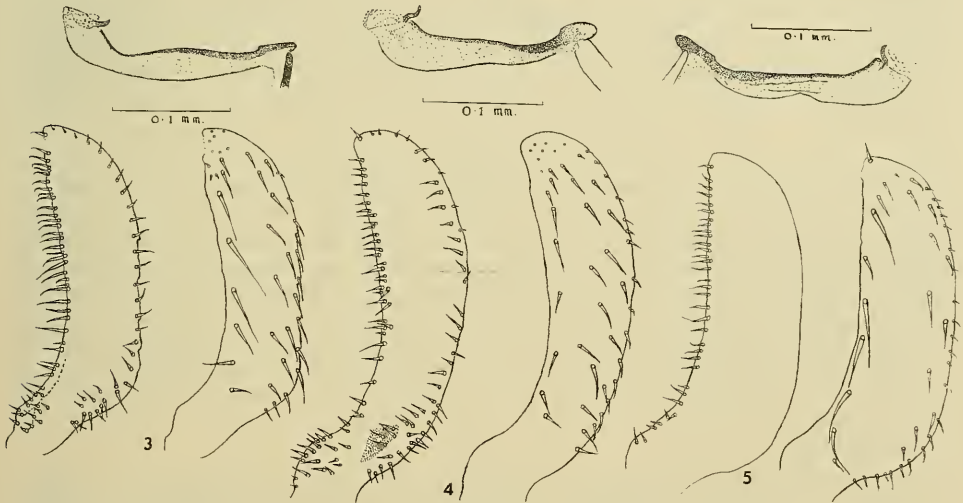
Male: Head: width 0.63 mm., dark brown or yellow suffused pale brown; vertex: along suture 0.27 mm., width 0.39 mm., dark brown, or yellow suffused brown; genal



Text-fig. 1.—Forewing of *Glycaspis (Alloglycaspis) wanbiensis*, sp. nov.

Text-fig. 2.—Hindwing of *Glycaspis (Alloglycaspis) wanbiensis*, sp. nov.

processes: length 0.24 mm., yellow sometimes suffused red, or suffused dark brown with tips paler; antennae: length 1.10 mm., pale to dark brown, with distal segs. darkest. Pronotum: width 0.49 mm., yellow to dark brown. Prescutum: yellow to dark brown. Scutum: yellow suffused brown, sometimes with two brown longitudinal lateral marks each side, or may be all dark brown. Scutellum, metascutellum, metanotum and post-metanotum, yellow suffused pale to dark brown. Abdomen: variable brown transverse marks on most segments. Genitalia: yellow suffused pale



Text-figs 3-5.—Aedeagus and claspers of (3) *Glycaspis (Alloglycaspis) wanbiensis*, sp. nov., (4) *Glycaspis (Alloglycaspis) repentina*, sp. nov., and (5) *Glycaspis (Alloglycaspis) occidentalis* (Solomon). (As claspers overlap and specimens were not cleared during processing, setae on the internal face were not sufficiently distinct to include in Text-fig. 5.)

brown, claspers and aedeagus as in Text-figure 4. Length of aedeagus (15 specimens): Extremes 0.164 mm. to 0.187 mm. Forewing: as in Text-figure 1, length 2.04 mm., width 0.73 mm., venation suffused pale to dark brown. Hindwing: Cu_1 as in Text-figure 2. Ventral: pale yellow suffused pale to dark brown.

Female: General colour as for the male.

Host-plant: *E. transcontinentalis*.

Type locality: Wanbi Experiment Station, Loxton, South Australia.

Types: Holotype male on slide labelled "Loxton, S.A., 15 iii 1961, N. Stewart. *E. transcontinentalis*", to The Australian Museum. Paratypes: 4 slides labelled as above to the Waite Institute, and 2 slides labelled as above to The Australian Museum. Dried specimens: 1 male and 1 female to the Waite Institute.

GLYCASPIS (ALLOGLYCASPIS) OCCIDENTALIS (Solomon).

The type-series of this species was placed in the collection of The Australian Museum, Sydney, during 1938 (personal communication, Solomon, 1961), but this information is not given in the original description of the species. The series consists of 7 microscope slide mounts of 1 male, 2 females, and several nymphs of instars 1 to 5. Two slides (one of a male and one of a female) were labelled "Co-type" and the other female was labelled "Subsidiary Type".

The male specimen has been selected and is here designated as the lectotype. The slide is labelled accordingly, and the remaining slides are each labelled "Paralectotype". The following data are now relevant to the various slides bearing the specimens:

Lectotype: 1 slide labelled "Lectotype. *Glycaspis occidentalis* (Solomon), ♂ (coll. *in cop.*). (Euparal.) Host—*Eucalyptus gomphocephala*. Perth, W. Aust. Dec. 1935. M. E. Solomon. Australian Museum Register Number, K67767".

Paralectotypes: (a) 1 slide labelled "Paralectotype. *Glycaspis occidentalis* (Solomon), ♀ (coll. *in cop.*). (Euparal.) Host—*Eucalyptus gomphocephala*. Perth, W. Aust., Dec. 1935. M. E. Solomon. Australian Museum Register Number K67768". (b) 1 slide labelled "Paralectotype. *Glycaspis occidentalis* (Solomon), ♀—used for drawing of leg (right post. leg). (Euparal.) Host—*Eucalyptus gomphocephala*. Perth, W. Aust. Dec. 1935, M. E. Solomon. Australian Museum Register Number K67769". (c) 1 slide labelled "Paralectotype. *Glycaspis occidentalis* (Solomon). Used for published drawing. Young nymphs before secn. of new test. Berlese's fluid. 27 Nov. '35. Australian Museum Register Number K67762". (d) 1 slide labelled "Paralectotype. *Glycaspis occidentalis* (Solomon). Used for published drawing. 2nd instar. Berlese's fluid. 27 Nov. '35. Australian Museum Register Number K67763". (e) 1 slide labelled "Paralectotype. *Glycaspis occidentalis* (Solomon). Used for published drawing. 3rd and 4th instars. Berlese's fluid. 27 Nov. '35. Australian Museum Register Number K67764, K67765". (f) 1 slide labelled "Paralectotype. *Glycaspis occidentalis* (Solomon). 5th instar. Used for published drawing. (Berlese's fluid.) Crawley, W. Aust. 12 Dec. '35. Australian Museum Register Number K67766".

All of the above specimens are in the collection of The Australian Museum, Sydney.

According to data given in the original description of *G. occidentalis*, the series was obtained from four colonies on *E. gomphocephala* A. DC (tuart) in the grounds of the Department of Biology, University, Crawley, Western Australia, here designated the Type-locality.

The claspers and aedeagus of *G. occidentalis* are shown in Text-figure 5. Length of aedeagus (1 specimen), 0.207 mm. Hindwings with Cu, as in Text-figure 2. Other features of the morphology and biology of this species are given by Solomon.

The similarity in coloration of *G. wanbiensis*, *G. repentina* and *G. occidentalis* necessitated the location and examination of existing specimens of Solomon's species. It is now evident that coloration, most morphological features, and even the host associations of some species, are but arbitrary means of separating species within the genus *Glycaspis*, so that a detailed study of the claspers and aedeagus of the males is essential. *G. wanbiensis* and *G. repentina* intermingle on the one plant, and it is assumed that the lectotype and paralectotypes of *G. occidentalis* represent the one species, as only a single male specimen is available. The assumption is probably correct as the lectotype ♂ and paralectotype ♀ are labelled by Solomon as being "collected *in cop.*", but there must necessarily remain a doubt concerning the other specimens.

DISCUSSION.

From the information supplied by Mr. N. Stewart concerning the habits of *G. wanbiensis* and *G. repentina*, and from their coloration and morphological characteristics, they are closely related to *G. occidentalis*. These three species apparently belong to a separate evolutionary group within the subgenus *Alloglycaspis* and are the only species of the genus at present known to construct lerps on the stems and leaf petioles of their host plant. In future references they will be referred to collectively as the *occidentalis* group of species. The lerps are round in shape, as are those of *G. occidentalis*, and the shape of vein Cu_1 of the hindwing venation of the three species is the same.

When considering the host associations of previously described species of *Glycaspis* (Moore, 1961), it is of interest to note that *E. gomphocephala*, the host plant of *G. occidentalis*, is placed in Section A, Macrantherae, Series viii (Cornutae), and *E. transcontinentalis*, which is the host plant of *G. wanbiensis* and *G. repentina*, in Section H, Platyantherae, Series xliii (subulate), by Blakely (1955).

As the number of rhinaria on the antennal segments of previously described species of *Glycaspis* broadly indicated their evolutionary sequence, the rhinaria of this group were also examined. In the most primitive group (i.e. gall-formers) rhinaria occur on antennal segments 4 to 9; in the intermediate group (i.e. species constructing flat, round or oval lerps) rhinaria occur on segments 4 to 6, 8 and 9; in the most recent group (i.e. species constructing rectangular lerps) rhinaria occur on segments 4, 6, 8 and 9.

Rhinaria on the antennae of the *occidentalis* group of species occur on segments 4 to 6, 8 and 9, but that on segment 5 is atrophied. From the antennal rhinaria, the feeding habits of the species and the shapes of their lerps, the group is regarded as having diverged, probably at an early stage of the evolutionary sequence within the genus, from the intermediate group of species within the subgenus *Alloglycaspis*.

Acknowledgements.

The writer is grateful to Dr. J. W. Evans, Director, and Mr. C. N. Smithers, Curator of Insects, of The Australian Museum, Sydney, for the loan of the type series of *G. occidentalis*, and to Mr. M. E. Solomon of the Agricultural Research Council, Slough, Bucks., England, for information concerning the location of the specimens. Thanks are also expressed to Mr. N. Stewart of the Waite Agricultural Research Institute, Adelaide, and Mr. K. L. Taylor of the C.S.I.R.O. Tasmanian Regional Laboratory, for providing the material of the two new species together with information on their habits.

References.

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